Amendments to the Specification:

Please add the following new paragraph after the Title and before the first paragraph on page 1:

THIS APPLICATION IS A U.S. NATIONAL PHASE APPLICATION OF PCT INTERNATIONAL APPLICATION PCT/JP2004/004091.

Please replace the paragraph, beginning at page 5, line 11, with the following rewritten paragraph:

A mechanical resonator according to a first form of the invention comprises: a vibration body operable to perform~~ing~~ a mechanical resonant vibration; and an electrode located in a vicinity of the vibration body, a surface of the electrode adjacent to the vibration body having a ~~during resonant vibration and arranged~~ curved shape in a direction ~~to~~ an amplitude ~~direction~~ of the resonant vibration of the vibration body. This increases the capacitance change per unit displacement amount of a vibration body in resonant vibration, thus the structure provides efficient~~ly~~ conversion~~ting~~ of an electric signal into a mechanical vibration or efficient~~ly~~ conversion of~~ting~~ a mechanical vibration into an electric signal.

Please replace the paragraph, beginning at page 5, line 21, with the following rewritten paragraph:

Meanwhile, according to a mechanical resonator of~~according to~~ a second form of the invention, the curved surface of the electrode in the first form has a same surface shape as a shape of the vibration body deformed in a resonance mode. Due to this, because the capacitance of the vibration body can be increased to a maximum limit, the capacitance change per unit displacement amount of the vibration body in resonant vibration can be increased. Thus the structure provides efficient~~ly~~ conversion~~ting~~ of an electrical signal into a mechanical vibration or efficient~~ly~~ conversion of~~ting~~ a mechanical vibration into an electric signal.

Please replace the paragraph, beginning at page 6, line 6, with the following rewritten paragraph:

Meanwhile, according to a mechanical resonator ~~according to~~of a third form of the invention, the electrode surface adjacent~~opposed~~ to the vibration body, in either the first or second form of the invention, has an area smaller than a surface area of the vibration body. This can suppress the excessive charge from generating in a capacitive coupling between the vibration body and an electrode, thus enabling a~~to~~ reduction~~e~~ of the alternating current undesirably leaking ~~unwantedly~~. Particularly, by avoiding the electrode from being arranged opposed to the vibration body where amplitude attains a maximum during resonance or the vicinity thereof, the relationship between voltage and force and between displacement and current is approximated to the linearity thus making it easy to control. Otherwise, by avoiding an electrode from being arranged opposed to an end of the vibration body, excessive charges can be suppressed from occurring, by a simple structure.

Please replace the paragraph, beginning at page 6, line 22, with the following rewritten paragraph:

Meanwhile, a mechanical resonator according to a forth form of the invention has a vibration body operable to perform~~ing~~ a mechanical resonant vibration and an electrode located in a vicinity of the vibration body and operable to vibrate~~d~~ in a resonance mode at the same resonant frequency as the vibration body. Due to this, the capacitance in the absence of vibration is reduced nearly to that of the parallel-plate structure while the capacitance in the presence of vibration at resonant frequency is maximized as to the vibration body, thus making it possible to increase the value of $|\Delta C/\Delta y|$. As a result, unwanted alternating current is reduced, thus enabling ~~to~~ efficient~~ly~~ conversion of~~t~~ an electric signal into a mechanical vibration and efficient~~ly~~ conversion of~~t~~ a mechanical vibration into an electric signal.

Please replace the paragraph, beginning at page 7, line 10 with the following rewritten paragraph:

Meanwhile, a mechanical resonator according to a fifth form of the invention further includes a bias power source connected to the vibration body and electrode in the first to fourth forms and operable to~~for~~ caus~~i~~e~~ng~~ an electrostatic field between ~~those~~the vibration body and the electrode, whereby the vibration body resonantly vibrates when a voltage change at a

resonant frequency is provided to between the vibration body and the electrode. This allows for efficient conversion of an electric signal into a mechanical vibration.

Please replace the paragraph, beginning at page 7, line 19, with the following rewritten paragraph:

Meanwhile, a mechanical resonator according to a sixth form of the invention further includes a detecting section operable to~~for~~ detect~~ing~~ a signal from a voltage change ~~of~~ between the electrode and the vibration body in the first to forth form, the detecting section being operable to detect~~ing~~ a signal converted from a vibration into an electric signal~~,~~ due to an electrostatic capacitance change ~~at~~ between the vibration body and the electrode during vibration of the vibration body. This allows for efficient conversion of a mechanical vibration into an electric signal.

Please replace the paragraph, beginning at page 8, line 4, with the following rewritten paragraph:

Meanwhile, a mechanical resonator according to a seventh form of the invention is characterized by providing an insulation layer ~~in~~between at least a portion~~one of opposite surfaces~~ of the electrode and the vibration body, in the first to fourth form. This can avoid an electric short ~~at~~ between the vibration body and the electrode. Particularly, the insulation layer is characterized by being a polymer particle having an insulation and a lubricity. Due to this, because insulation layer thickness is made constant while the fluororesin has a lubricity, the uncontrollable absorption force called stiction can be reduced even when the vibration body is placed in contact with the fluororesin particle~~5~~.

Please replace the paragraph, beginning at page 8, line 16, with the following rewritten paragraph:

Meanwhile, a mechanical resonator according to an eighth form of the invention further comprises a ~~first~~ second contact electrode arranged on a surface of the vibration body adjacent~~opposed~~ to the electrode and isolated from the vibration body, and a ~~second~~ first contact electrode~~,~~ arranged in a vicinity of the electrode, being isolated from the electrode and ~~in a manner of~~ being ~~fit~~aligned with the ~~first~~ second contact electrode in the direction of the resonant vibration of the vibration body, in the first to fourth form of the invention. Due to this, because the vibration body has a dynamic displacement amount due to electrostatic force that

is Q-value times the static displacement amount thereof, contact electrodes can be put in contact at a small voltage.

Please replace the paragraph, beginning at page 9, line 2, with the following rewritten paragraph:

Particularly, there is further included a bias power source connected to the vibration body and the electrode and operable to ~~for~~ generate~~ing~~ an electrostatic field between ~~those~~the vibration body and the electrode, the vibration body being operable to resonantly vibrate~~ing~~ when a voltage change is provided ~~to~~ between the vibration body and the electrode, the vibration body being ~~to be~~ electrostatically absorbed by ~~means of~~ a voltage of the bias power source at a time that the ~~first~~ second contact electrode comes near the ~~second~~first contact electrode. Due to this, the resonant vibration displacement of the vibration body is controlled in amount to a degree of collision with the electrode. By absorbing the vibration body onto the electrode due to an attraction force of electrostatic force ~~of~~ between the vibration body and the electrode in the instance of re-approach, contact-fixing can be provided between the first contact electrode and the second contact electrode, thus realizing a switch function utilizing the same.

Please replace the paragraph, beginning at page 15, line 1, with the following rewritten paragraph:

In Fig. 1, a vibration body 1 is a both-end-supported beam having both ends provided as fixed ends 7, having a thickness h, a width W and a length L. An electrode 2 is provided in proximity to the vibration body 1. On the surface of the electrode 2, there is provided an insulation layer 3 having a thickness d and a relative dielectric constant εr in order to avoid electric short due to a contact of with the electrode 2~~the both~~. At this time, in the case of utilizing a flexural vibration primary resonance mode of the vibration body 1 as a both-end-supported beam, the shape of the vibration body 1 in a primary resonance mode is expressed by the following equation with the use of an x-y coordinate in the figure.

$$y(x) = y_{\max}\left[\frac{1}{1.6164}\{\varsigma(\cos\kappa x - \cosh\kappa x) + \sin\kappa x - \sinh\kappa x\}\right] \quad (3)$$

ζ = -1.01781, k = 4.730/L

Please replace the paragraph, beginning at page 34, line 9, with the following rewritten paragraph:

In Fig. 16, a contact 4a is formed as a first contact electrode in an insulation layer 3a in the vicinity of a center of an electrode 2, whose surface is exposed on the insulation layer 3a. Also, a contact 4b is formed as a second contact electrode ~~through an insulation port 3b~~ at a lower surface center of a vibration body 1, to apply a direct-current bias voltage Vb and alternating voltage vi to between the vibration body 1 and the electrode 2. An insulation port 3b is provided between the vibration body 1 and the contact 4b so as to isolate the contact 4b from the vibration body 1. The difference from the structure of the mechanical resonator in embodiment 6 lies in having those contact 4a, 4b, which are arranged to be isolated from the electrode 2 and the vibration body 1,respectively.